



# White Paper

## Fujitsu Dynamic Infrastructures

With the Fujitsu Dynamic Infrastructures portfolio, Fujitsu created a unique and comprehensive offering of IT products, data center solutions, Infrastructure as a Service and Managed Infrastructure services. This complete offering enables customers to make the most beneficial choices for their overall enterprise IT Infrastructure architecture and to select the most effective way to leverage alternative sourcing and delivery models at any time and around the globe. That is why Fujitsu calls it in plural: Dynamic Infrastructures.

Dr. Joseph Reger, Chief Technology Officer,  
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# Introduction

## Fujitsu Dynamic Infrastructures

The relationship between business processes and IT environments has been at the center of every CIO's attention for over 30 years. During most of that time data center staff has tried to build IT infrastructures that served as a utility in all departments— occasionally with, but more frequently without huge success. Even today, building entirely 'business-driven' hard- and software architectures for organizations is still a challenge, and networks with matching characteristics are the exception rather than the norm.

The reasons for this current state of IT are manifold. Historically, today's servers started out as number crunchers that processed complex calculations faster and more reliable than even the most ardent bookkeepers or statisticians. Many applications, on the other hand, were developed to disburden office staff or at least simplify mundane yet time-consuming tasks such as writing up business letters or accounting sheets that were then copied, sent via mail and stored in folders retained by records management. Today, industry-standard servers and PCs are all-rounders which perform any and all tasks, from database operations through production planning and control to CAD/CAE and beyond.

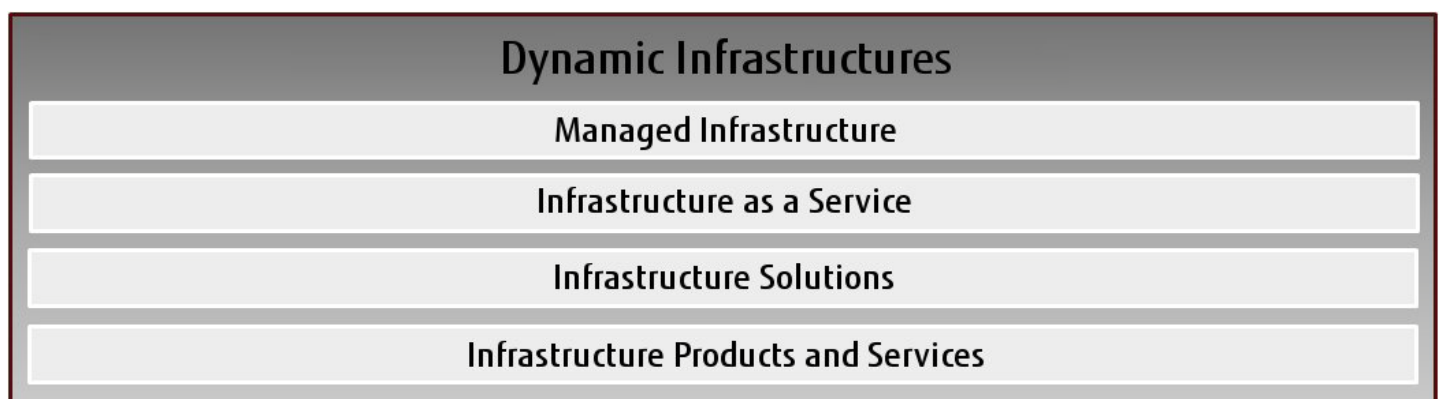
But despite such advancements, the main objective of simplifying workflows, or better: transforming IT processes according to business needs was never completely achieved. The cause of such alleged inconsistencies is that computers tend to shape company operations and procedures after their own logic instead of adapting to them. This often results in a static, 'frozen' IT that dominates where it should serve, that way causing massive technical and organizational overhead and ultimately expenses. Such an inflexible cost driver already produces enough encumbrances in prosperous times – and becomes positively painful during an economic downturn like the one we have witnessed over the past two years.

Fujitsu's Dynamic Infrastructures portfolio represents the exact opposite. By definition, it was created to enable businesses to respond rapidly to changing needs and provide flexible IT capacity that adapts to new situations as they begin to unfold. Dynamic Infrastructures pool a comprehensive choice of products, services and solutions into one portfolio. By combining state-of-the-art technologies such as virtualization and real-time allocation of resources with advanced management options for automation and orchestration, Fujitsu has created a framework for IT operations that focus on increased efficiency, high agility and enhanced reliability – for the sake of your organization.

In the stricter sense, Fujitsu Dynamic Infrastructures are comprised of four different layers:

- **Infrastructure Products and Services**, a combination of industry-leading servers, clients, storage solutions, Maintenance and Support Services that enable customers to build and operate dynamic environments on site;
- **Infrastructure Solutions**, pre-configured and pre-tested, "out-of-the-box" configurations for dedicated usage scenarios such as database operation and management or enterprise resource planning;
- **Infrastructure as a Service** bundles the offerings for provisioning virtual and dedicated servers, storage capacities in various classes as well as workplace environments out of Fujitsu data centers.
- **Managed Infrastructure**, where the operation of only sections or the whole IT infrastructure, can be out-tasked, yet the customer always stays in control.

It is important to keep in mind that these four layers are arranged in ascending order, with Infrastructure Products and Services laying the foundation upon which all other tiers build and Managed Services at the top



# Infrastructure Products and Services

## Fujitsu Dynamic Infrastructures

In this chapter, we will look in detail at each of the four layers and give an overview of the components that our portfolio consists of:

The basic layer of Fujitsu Dynamic Infrastructures is comprised of what most customers would regard as 'classic' compute products – servers, clients, storage, network products, and management software, all of which offer advantages over the competition. This advantage is twofold: Fujitsu pairs a holistic approach to design with a long-standing tradition of bringing new, enhanced functionalities to standard hardware, resulting in product lines that are both cutting-edge as well as 'data center-ready' off the shelf.

### PRIMERGY Servers

This is particularly important with regard to Fujitsu's PRIMERGY line of industry standard servers. Here, best-in-class performance meets excellent reliability, enhanced networking capabilities, and automation and virtualization features that are based on the company's mainframe expertise and have yet to find their peers on x86 hardware. Thanks to these characteristics, PRIMERGY rack, tower and blade systems have won leading positions in numerous SPEC benchmarks. At the same time, various models have received highest ratings for their energy efficiency from authorities like the U.S. Environmental Protection Agency's (EPA), which qualify them as building blocks for "green" networks and data centers.

#### INFO BOX

##### PRIMERGY CX1000 – CLOUD EXTENSION SERVERS

Fujitsu's PRIMERGY CX1000 has been designed from the ground up to support scale-out infrastructures on an industry-standard platform. PRIMERGY CX1000 simultaneously addresses the four main challenges of large scale-out data centers – i.e. performance, cost, power/cooling, and footprint – by providing:

- Scale-out performance, delivered with replicable building blocks consisting of 38 servers in each PRIMERGY CX1000 enclosure;
- A lower cost of acquisition and operations through a minimalistic server design approach;
- The Cool-Central™ cooling architecture, which can reduce power/heat energy costs by up to 20 percent and more;
- A data center footprint that is up to 40 percent smaller than that of traditional systems, enabled by back-to-back setup of enclosures.

### ETERNUS Storage

Within Dynamic Infrastructures, storage is an important pillar. Agile, efficient and highly reliable IT infrastructures demand powerful storage platforms. For example, most of today's companies could not run their networks without proper failover solutions – meaning, servers which resume a task on the spot if the primary system fails and call for highly reliable data repositories at the backend. At Fujitsu, we realized such interdependencies at a very early stage. Consequently, we provide extremely innovative, reliable and efficient storage solutions that

stand for top quality and high performance, based on our own intellectual property: ETERNUS DX disk storage systems are the most reliable and secure data safes available, using the same software stack and hardware functionalities from entry level to high-end to allow ease-of-use and considerably increase efficiency on the user side. ETERNUS LT tape automation systems protect your investments in classic backup technology. The ETERNUS CS solution family offers an outstanding data protection for dynamic infrastructures. ETERNUS CS minimizes backup times and fulfills all recovery time objectives for each business critical environment. – In addition, Fujitsu has been working with best-of-breed partners for more than a decade.

However, as the face of networking changes, so does the face of storage. Traditionally, a failover solution meant that companies had to install two machines for every main application or file server – one productive (or "live") and one reserve system. Therefore, infrastructures would often double in size and cause a surge in both capital expenditures and operational costs. The answer to this dilemma is 'intelligent storage', a concept that allows for the pooling and dynamic allocation of IT resources on demand and can be found at the core of the Infrastructure Solutions introduced below.

#### INFO BOX

##### PRIMERGY BX400 – DATA CENTER IN THE BOX

The PRIMERGY BX400 gives customers with heavy computing and storage requirements a compact infrastructure that reduces complexity, saves power and increases productivity, leaving them more time to focus on their core business.

The overall easy-to-use approach simplifies the management of the entire lifecycle and helps to save valuable time. It provides an optimum combination of up to 8 server- and storage blades in a small enclosure, combined with leading-edge technology with impressive I/O flexibility and bandwidth

Target customers are smaller and midmarket companies as well as branch offices and larger enterprises, who own between 3 and 30 servers.



### Notebooks, PCs, Workstations, Thin Clients and Zero Clients

The front end of all modern IT environments, the part most visible to the user, comprises a host of client systems for mobile and stationary operations. These notebooks, PCs, workstations, thin clients and zero clients have to fulfill the same requirements as servers and storage in term of performance, reliability, flexibility, and energy efficiency. Fujitsu covers this ground with multiple offerings:

- LIFEBOOK is Fujitsu's notebook brand that provides the mobile hardware platform for all possible usage scenarios, from standard office environments to demanding power user workloads. Fujitsu business notebooks satisfy a wide range of customer demands from extended mobility through universal expandability and connectivity to workstation-comparable performance, while at the same time they stay within the limits of the aforementioned eco-labels.
- ESPRIMO and CELSIUS are the labels of Fujitsu PCs and workstations that can be used to perform standard, complex or advanced tasks. The main difference between both product lines is in the nature of these tasks: ESPRIMO PCs are meant to run office and business applications like email, spreadsheets or databases, while CELSIUS workstations tend to computationally complex duties such as CAD/CAE, 3D-modelling, visualization or scientific simulation.
- Virtualization has transformed the way businesses manage their servers and storage. With thin clients and zero clients Fujitsu brings the same benefits of lean IT into the office. FUTRO thin clients are basically a simplified edition of regular PCs that are built without power-hungry moving parts (like hard disks drives) and come with a lean operating system. They serve as user interfaces to server-based applications or neutral platform for virtual workplace solutions and are intended to deliver the best possible results with minimal hard- and software equipment. FUTRO thin clients are not only attractively priced, but also very energy efficient and easy to deploy/replace, which helps data centers achieve maximum flexibility at a low Total Cost of Ownership.
- The silent, space-saving Zero Client delivers a complete desktop experience, securely and reliably, at a fraction of the normal cost. As the name suggests, it goes beyond traditional fat or thin client technology and comes without any of the usual hardware at all. The needed intelligence is integrated into a single monitor. For mobile users, everything is on a USB stick that simply plugs into the PC. Business applications, storage, and operating system are delivered from powerful backend servers.

#### INFO BOX

##### ENERGY EFFICIENCY AND "GREEN IT"

**We seek to reduce IT environmental load and to use IT to help solve environmental problems**

The demand that compute products should be environmentally compatible often seems like a relatively new concept that was spurred both by surging energy prices and the ongoing debate about climate change. Fujitsu, however, started to design and manufacture "green" products and solutions over two decades ago. Nowadays, what once began as an initiative to produce low-radiation, TCO-compliant displays has turned into a committed to incorporating environmental innovation in all of our practices: wherever possible, Fujitsu reduces emissions, substitutes toxic heavy metals, and builds hardware that fulfills even the strictest requirements concerning energy efficiency. This approach has earned Fujitsu products numerous awards and certifications, such as Energy Stars for PCs, small-scale and industry standard servers, and notebooks. Our most important achievements include:

- Reducing server energy consumption by 40 percent with the aid of select components – such as highly efficient processors, hard disks and power supplies (with ratings of 90 percent and over) – and extended management options. At the same time, our Cool-safe™ architecture ensures continuous airflow within the system, thus minimizing the use of fans and noise exposure by 50 percent.
- Introduction of 0 Watt technology: Fujitsu has reduced power consumption of regular office PCs by 60 percent over the past 4 years. As within PRIMERGY servers, a number of features were combined to achieve this goal, from enhanced power management capabilities through power supplies with efficiency factors near 90 percent to 0-watt technology for monitors and entire PCs.

With Green Policy 21 our long-term environmental vision we are aiming to reduce carbon emissions by a total of 15 million tons globally until 2012.



### Network equipment and management software

If servers, storage and clients are the viscera of IT environments, then networking devices constitute their nervous system. Hence, no true infrastructure provider can afford to refrain from including these products in his portfolio – in particular IP switches, SAN switches, and directors. However, with industry leaders Brocade and Cisco being as far ahead of the competition as they are, it is only logical to integrate their products into Fujitsu solutions in order to add the best possible value for our customers.

Regarding management software, the situation appears to be very similar at first sight – and is yet entirely different. Being both a hardware vendor and infrastructure provider, not only do we know our own systems best – but also supply a consistent concept of how Fujitsu clients, servers and storage should work together in Dynamic Infrastructures. Accordingly, Fujitsu offers a wide range of software products from database management systems to high availability solutions. At the core of these is ServerView, a comprehensive suite of server management tools that is based on the principle, “Always on and easy to manage.” One of its most important constituents is ServerView Resource Coordinator VE (RCVE), which facilitates uniform operations for pools of physical and virtual servers. By simplifying and automating server lifecycle operations, RCVE enables dynamic allocation of server resources to applications and cost-effective high-availability while reducing overall operational efforts.

### Maintenance and Support Services

This part of the Dynamic Infrastructures foundation layer offers standardized services for hardware and software maintenance and easy project rollouts. Customers can count on 7x24 service thanks to our worldwide network. Fujitsu puts a strong focus on continuous proactive and reactive involvement – with short response times and defined recovery times. At the heart of all platforms, integrated real-time service software ensures remote access of any system connected to the Internet – anywhere. The result: fast analysis and repair in case of system failure.

### Benefits

Customers with a core competence in hosting and managing their IT infrastructure can choose their hard- and software equipment in the traditional way. Fujitsu offers them a wide range of products designed to meet even the most demanding infrastructure requirements, thus contributing to further success. Our Maintenance and Support Services help turn this already reliable platform into a rock-solid foundation for high availability (HA), virtualization, and consolidation scenarios.

#### INFO BOX

##### FINANCIAL SERVICES

The core of flexible Fujitsu Dynamic Infrastructures is a transparent pricing model that in turn is based on a sophisticated financial solution. Fujitsu Financial Services help customers acquire tomorrow's technology today. With unique and tailor made solutions, Fujitsu addresses shrinking customer budgets, transfers technology risk, and disperses financial risk. Fixed payments agreed in advance help to plan budgets and give customers the freedom to replace equipment at any time to ensure greater flexibility. The simplified administration process results in a significantly lower Total Cost of Ownership. Whether for the traditional hardware purchase or for service-oriented infrastructure offerings, Fujitsu Financial Services provide a substantial additional value for our customers.



# Infrastructure Solutions

## Fujitsu Dynamic Infrastructures

The second layer of the Fujitsu Dynamic Infrastructures portfolio bundles hard- and software with application-specific and/or market segment expertise. The results are standardized solutions that can be adapted to individual needs. Infrastructure Solutions are a clear path to the private cloud.

With many of Fujitsu's infrastructure packages, the idea of dynamic is present even in their names. FlexFrame®, x10sure™ and others clearly refer to the basic concept of turning IT environments into flexible and agile units that quickly adapt to changing business needs. In this chapter, let us look at a few examples underlining the Infrastructure Solution approach.

### Consolidation

With the increased pressure on organizations to lower costs, increase service levels and reduce carbon footprint, the data center, as the central location of the organizations compute resources, is the logical place to start. Consolidation of data center resources is a pre-requisite for any dynamic infrastructure. Fujitsu's approach to consolidation is based on combining innovative technologies with over 30 years experience in the design, construction, and maintenance of data centers. Fujitsu **FlexFrame for SAP** is a complete, pre-configured and pre-tested solution combining servers, storage, networking devices and all required software (i.e. operating system, SAP modules, and management software) in a lean and clear environment. Both the operating system and the SAP software reside on a central storage array from where they can be assigned to any server in the pool within minutes. Should an application fail, resources are automatically reallocated and the server is started on another physical or virtual machine without delay. Thus, customers will need only one or a few standby servers (N:1-, N:M-configurations) to keep their SAP systems ready-to-operate.

### Virtualization

Virtualization of compute resources has been a proven technology since the mainframe era, but with the advent of client server architectures and cheaper, single role x86 servers, utilization of individual IT resources has been in decline. Server virtualization can address this primary problem of low asset utilization as well as provide other benefits such as reduced power consumption, lower procurement costs and smarter management. The consequences are increased flexibility, agility and availability of use. Fujitsu's approach to server virtualization is to first understand customers business and then focus on the specific pain points to deliver targeted benefits. In order to do this Fujitsu provides a number of proven optimization and assessment services that can assess the benefits of virtualization as well as quantify the overall Return On Investment (ROI). By combining the best hardware available with industry leading virtualization software from vendors such as VMware, Citrix and Microsoft, Fujitsu is able to deliver the solution that best suits individual requirements.

### INFO BOX

#### OPTIMIZE YOUR IT

Reducing IT complexity and costs is a key task for CIOs in organizations of all sizes. The challenge is the same across all industries: analyze the current environment and its capabilities and identify optimization potential quickly and efficiently. To help customers in this process, we have developed our Fujitsu OPTIMIZATION Services that offer efficient consulting packages for IT infrastructures. They assist you in implementing valuable optimization measures for your specific requirements.

To this end, Fujitsu consultants work closely with you to understand your needs and particular goals. You receive qualified information and recommendations that suit your individual situation instead of being based on vague industry or market averages. Our solution methods are based on comprehensive technological and product skills; they have been proved and standardized in decades of successful consulting projects. In short, OPTIMIZATION Services help you to quickly obtain assessment results and advice, accelerate decision making and implement infrastructure improvements faster.

Fujitsu OPTIMIZATION Services currently span seven areas of application:

- Data center efficiency and green IT;
- Server virtualization;
- Storage consolidation, improvement of backup processes and data protection;
- Network performance and consolidation;
- SAP environments: performance, workload, response time behavior and trend analysis, sizing recommendations;
- Oracle databases: performance analysis;
- Microsoft Active Directory®: performance and integrity analysis.

The OPTIMIZATION consulting packages are offered at fixed price. Optionally each package can be enhanced and customized to meet specific requirements.

### Business continuity

Management of all the important business information is also an essential function of Dynamic Infrastructures. Achieving uninterrupted access to such information is therefore a vital factor in maintaining the reputation of the business and the confidence of your customers. To guarantee ongoing business continuity, organizations need to build mechanisms that ensure seamless operation even in the event of system failures or disasters. **ManageNow** is a portfolio of modular solutions from Fujitsu for easy, automated implementation and efficient operation of customer-specific Enterprise IT Management (EITM). The management solutions for heterogeneous environments running various operating systems and IT infrastructure components from various manufacturers were developed according to the principle "based on real-world experience, for real-world use."

### Data protection

Effective combinations of disk and tape increase efficiency by enabling Information Lifecycle Management (ILM) as part of the backup process. With the cost of tape cartridges lower than disk, but with disk more suited to short term data caching; the ability to manage the entire lifecycle across multiple storage tiers, from a single appliance, reduces overall disk capacity costs. Fujitsu's approach to reduced data protection costs is the Fujitsu **ETERNUS CS** virtual tape appliance. Fujitsu is unique in aligning tape, disk, and advanced deduplication technology as part of an Information Lifecycle Management strategy for data protection. This allows enterprises to implement flexible service levels, such as minimized backup times, and to fulfill all recovery time objectives. ETERNUS CS avoids data loss to ensure business continuity, with the lowest Total Cost of Ownership for optimized usage of different storage technologies.

### Benefits

Infrastructure Solutions typically consist of various IT components and combine them to serve specific usage scenarios. Fujitsu's objective is to deliver pre-tested configurations that facilitate consistent, end-to-end quality of service. In each of the given scenarios, these packages will greatly reduce integration and maintenance efforts. In addition, the proven concepts substantially decrease project times and risks. And not to forget, once implemented, they enable flexible assignment of resources as well as better system utilization. Thus, Infrastructure Solutions assure that important business processes get the attention they deserve while helping our customers to cut costs considerably: with FlexFrame for SAP, they may save up to 50 percent compared to traditional implementations.

### INFO BOX

#### CASE STUDY: HOW OMV MODERNIZED THEIR SERVER INFRASTRUCTURE

With an annual turnover of 25.5 billion euros and more than 40,000 employees, the OMV Aktiengesellschaft is one of the largest listed on the Vienna Stock Exchange and the leading utility company in southeastern Europe. Their IT operations are handled by an internal service provider, OMV Solutions, who were looking for a partner to help them modernize their 3-year old rack server environment, distributed across over 20 countries worldwide. Fujitsu won the call for bids on the grounds that our offer optimally fulfilled the requirements regarding server equipment and quality: a mix of PRIMERGY RX200, RX300 S4, and RX600 servers not only ensures maximum performance, but also consistent, straightforward management. What is more, all servers are energy-efficient by design, thereby helping OMV to reduce power consumption and operational costs in their data centers, as Christian Berndt, Head of Data Center IT, observed. In addition, Fujitsu also handled logistics and clearing facilities and offered specific SLAs for all countries, for a fixed price. Therefore, it comes as no surprise that Mr. Berndt was impressed: "In terms of flexibility, speed, efficiency and cost-effectiveness, Fujitsu was precisely the contractor we needed."



# Infrastructure as a Service

## Fujitsu Dynamic Infrastructures

Over the past few years, a new delivery model for IT services has gained large popularity among users and vendors alike. Popularized by social networks and business platforms such as salesforce.com as well as with services like Google Docs, "cloud computing" has become the most successful concept in many years. However, the success of these web-based services proves there is more to it than just mere exaltation at the thought of staying globally connected. For most IT solutions providers and their clients it is also a very attractive way of rendering and receiving services by virtualizing formerly physical IT infrastructure.

In the meantime, Fujitsu offers "IT capacity straight from the socket", as one engineer humorously put it. But of course more accurately this layer of the Fujitsu Dynamic Infrastructures portfolio is known as Infrastructure as a Service (IaaS). Here the idea is to provide standardized resources and functions via secure network connections—by default—over the Internet. This means ICT departments can allocate extra server capacity and services at very short notice. They can also scale their environments in accordance with recurring peak workloads in a secure and organized manner. Pricing/billing is based on a pay-as-you-use model that ensures that the customers are only charged for services actually demanded. Extensive standardization and automation mean administrative overheads are reduced to a minimum.

Infrastructure as a Service bundles the offerings for provisioning, virtual and dedicated servers, storage capacities in various classes as well as workplace environments. Enterprises and partners can quickly use the offerings according to their needs, without having to invest time and money in setting up and maintaining their own infrastructures.

All "as a Service" offers include:

- Operational services
- Standardized SLAs
- Usage-based billing model
- Standardized prices
- Automated processes for provisioning
- Configuration via a self-service portal

### Server as a Service

This offering allows enterprises to use specifically configured servers hosted in Fujitsu data centers in order to handle peak workloads as needed. Server as a Service is available as a virtual server and as a dedicated server with and without operating systems. All offerings include virtualization with VMware.

Server as a Service can be ordered with various SLAs. The services can be ordered quarterly, with monthly service billing according to usage. Server as a Service offers enterprises high flexibility and complete transparency in terms of costs. Enterprises benefit from lower costs and less administration thanks to the economies of scale offered by Fujitsu through the high levels of standardization and automation in the Fujitsu data center.

### INFO BOX

#### CASE STUDY: REDISCOVER YOUR CORE COMPETENCIES WITH IAAS: THE TMC EXAMPLE

The German, Paderborn-based advertising agency TMC had planned to add a new "web publishing infrastructure" to their network. However, an initial assessment revealed that implementing and operating this unit would tie up too many personal and financial resources. Ultimately, these considerations led to the decision that the company should not deal with IT management at all. On that score, TMC opted for Server as a Service. Nowadays, the agency's former central server and additional resources are hosted and managed by Fujitsu, while all functions are delivered over the Internet directly to the workplace. Customized SLAs and usage-based billing further simplified IT operations for TMC, so that the employees can now concentrate on what they do best: creating custom-made campaigns.



### Storage as a Service

This offer provides enterprises with specifically configured storage resources hosted in Fujitsu data centers. Storage capacities and functionalities are made available quickly and securely not only as extensions to ordered servers but also as independent services. The storage services are accessed using a secure Internet connection and the customer's web portal. Storage as a Service can be ordered in various storage classes with various SLAs. The services can be ordered quarterly, with monthly service billing according to usage. Storage as a Service offers enterprises high flexibility and complete transparency in terms of costs. Enterprises benefit from lower costs and less administration thanks to the economies of scale offered by Fujitsu through the high levels of standardization and automation in the Fujitsu data center.

Workplace as a Service

This offer gives enterprises the option of ordering workplace environments for their end users as Hosted Virtual Desktops or Hosted Shared Desktops. Fujitsu hosts these systems in its data centers with high security standards. In order to enable provisioning of applications in a fast and flexible way, application virtualization technologies are applied. The combination of application virtualization and profile virtualization guarantees a fast and dynamic desktop delivery on demand. Intelligent load balancing ensures optimized usage of server and network capacities. Workplace as a Service is available with defined SLAs. This offer helps enterprises lower the overall cost of their PC environment while considerably reducing the workload involved in managing their workplace environments and improving end user productivity through high availability. Furthermore, end users can flexibly access their workplace environment from anywhere. Workplace as a Service is available with short contract periods. The service can be modified and scaled during the contract period as needed in response to changing business requirements.

Benefits

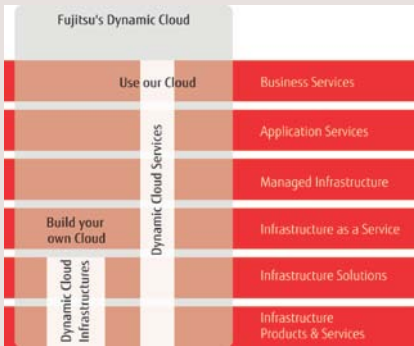
At first glance, Infrastructure as a Service and Infrastructure Solutions show some similarities: both Dynamic Infrastructures layers extensively use virtualization to provide functionality and transform its technical advantages into customer benefits. The main difference between the two is that IaaS requires even less equipment on site, as all server capacities are hosted at Fujitsu data centers and all functionalities are strictly delivered online. The added value is obvious – customers can order capacities on demand and cover peak loads smoothly based on a transparent pay-per-use price model. At the same time they reap the benefits of high automation and standardization levels, namely simplified management and faster service delivery. All this helps to keep the Total Cost of Ownership predictable at a low level, while increased agility and flexibility open up the chance to create new services and new ways to generate revenues. To eliminate security concerns, Fujitsu avoids single points of failure in its cloud portfolio because services are provided from various standardized locations that are configured to deliver high availability. Furthermore, for data storage and backup, compliance with country-specific data protection laws and guidelines as well as business requirements is ensured. After security and data privacy, the portability of data becomes important, especially when a customer wants to switch to a faster or more affordable solution. Fujitsu respects this and makes sure that customer data can be ported securely – no matter which direction the customer chooses.

INFO BOX

DYNAMIC CLOUD – BRIDGING TODAY AND TOMORROW

Cloud computing delivers a level of flexibility, efficiency and cost control that was impossible a few years ago. Today most companies see the advantages, but the way into the cloud holds some challenges. Providing a bridge between today's largely on-premise data center infrastructures and tomorrow's cloud-based delivery models. The Fujitsu Dynamic Cloud gives customers complete control over the critical make-or-break factors for enterprise cloud adoption. By providing policy- and business requirement-based choice over granular factors such as the physical location and future portability of data, Fujitsu removes the major stalling points of compliance and lock-in. Build on the global IT portfolio, Fujitsu enables customers to use most suitable combinations of cloud types:

- With Dynamic Cloud Services customers can use the Fujitsu Cloud either for a Private or Trusted Cloud environment
- With Dynamic Cloud Infrastructures customers can build their own cloud



# Managed Infrastructure

## Fujitsu Dynamic Infrastructures

The first two layers of the Fujitsu Dynamic Infrastructures framework (Infrastructure Products and Services and Infrastructure Solutions) represent the traditional buying model, where the customers themselves have to go through the hassle of set-up and implementation and have to handle all operational issues going forward.

Signing for one of our Managed Services passes on these aspects to Fujitsu – often referred to as out-tasking. You are still retaining full control over your ICT, while customers benefit from highly standardized services delivered from centralized shared delivery centers. The service includes monitoring and either remote or on-site operational services (e.g. physical hardware provisioning). As a result you will enjoy expert level services together with cost-savings compared to running the operations on your own. The Managed Infrastructure layer offers the largest potential for adjustment to your individual customer needs. Whether it is the physical data center location (on- or off-premise) or the details of the Service Level Agreements (SLAs) that often also represent the key-performance indicators used for billing.

In combination with the cloud type offerings of layer 3 – Infrastructure as a Service - Fujitsu thus offers customers the flexibility to choose the best-fitting IT delivery model. With Managed Infrastructure expertise a professional operation by experts is secured. Fujitsu makes sure that a seamless transition and integration is possible.

The complete Managed Infrastructure portfolio consists of:

- Managed Data Center
- Managed Workplace
- Managed Maintenance

To better understand how these solutions work, let us look at a few examples.

### Managed Data Center

The Managed Data Center package from Fujitsu offers comprehensive support for managing servers, storage systems and networks in data centers. The offering covers analysis, planning, implementation and full or partial operation of the infrastructure. **Managed Storage** helps customers to cope with the explosive growth of data volumes over the long-term, both reliably and economically. The offering covers all tasks related to online storage and backup, and enables standardization of storage systems and software. Customers are billed only for the capacity used and thus benefit from full cost transparency.

### INFO BOX

#### CASE STUDY: MANAGED STORAGE AT LANXESS

With more than 14,300 employees in 23 countries and an annual turnover of 5.06 billion Euros (2009), the Leverkusen-based LANXESS AG, a spin-out from Bayer, is Germany's largest stock listed specialty chemicals company and the number one rubber company in the world. LANXESS is represented at 43 production sites worldwide. The core business is the development, manufacturing and marketing of plastics, rubber, intermediates and specialty chemicals. Meeting today's demands for storage capacity, performance and data protection, storage management, and availability is a real challenge. While LANXESS IT has to support an active business portfolio, dynamic storage is key for LANXESS IT to benefit additionally from new technologies like server and desktop virtualization or even using private company cloud services. To meet their storage requirements in terms of cost, flexibility and maintenance, LANXESS was looking for a partner able to meet these challenges.

Starting at an initial capacity of 65 TB and expecting annual growth rates of 15 percent, crucial demands included individually defined service levels, pay-per-use pricing for cost transparency, recovery time objectives of 4 hours for certain areas, and lead times of 3 days. With Managed Storage, Fujitsu was able to build a made-to-measure solution within the given time frame and now operates LANXESS' storage infrastructure for the next years. According to Christian Günther, Head of IT Infrastructure at LANXESS, "storage is like a Gordian Knot, with Fujitsu we have solved our pain points."



The **Managed Server** portfolio covers the entire life cycle of server infrastructures, even including those in heterogeneous environments. Ensuring cost-optimized, uninterrupted operations and the further development of infrastructure, includes comprehensive support through consulting, design, installation as well as maintenance and operation. 7x24 monitoring with advanced automation solutions proactively prevents any interruptions that could negatively impact business.

Enterprises today are trying to cope with the high operational costs of their SAP environments – thus making it difficult to invest in new technologies and solutions that could drive core business activities.

**Managed SAP IT Infrastructure** offers solutions that help to reduce overall SAP costs while improving the quality of these services at the same time.

## Managed Workplace

Managed Workplace covers the management of IT workplaces throughout their entire lifecycle. In order to optimally meet the demands of the various user types, distributed and centralized virtual infrastructures, as well as smartphones are taken into consideration.

Standardization and automation ensure highest service quality and end user productivity, whilst reducing risks and costs. The workplace infrastructure is operated and supported according to defined customer-specific service level agreements which can flexibly be adapted to meet changing requirements. Service delivery is not just fast, reliable and affordable, but also consistent across national borders. A "price-per-seat" model is the basis for billing, enabling absolute cost transparency. Methodologies used in our Active Service Management lead to continuous improvements in quality and cost-effectiveness.

Managed Workplace comprises **Managed Workplace Distributed**, the management of distributed PC infrastructures, no matter whether stationary or mobile devices are used, and **Managed Workplace Virtual**, the end-to-end management of complete virtual workplace infrastructures. The extension Managed Smartphone responds to the always increasing need to integrate smartphones into the enterprise IT, and covers lifecycle management for these devices.

## Managed Maintenance

Today's data centers are mostly heterogeneous, very complex and often international environments need to be precisely coordinated. Managed Maintenance helps to control service contracts in a multivendor IT environment. Starting with the administration of existing contracts with various IT service suppliers, Fujitsu provides a single point of contact for all IT users and service requests as well as for IMAC/D (Install, Move, Add, Change / Dispose) services and controls service level achievements. Following a multistage model Fujitsu then harmonizes SLAs and achieves significant cost advantages for the customer through the use of innovative service concepts. The services include regular reporting also with respect to licenses and assets.

Fujitsu runs a Global Program Management Office (GPMO) with a 3-hub structure with offices in Europe, America and Asia Pacific to serve multinational customers. The GPMO can handle intercultural and geographical challenges in a very efficient way. Fujitsu provides multilingual support in 26 languages, 7x24 in all time zones (follow-the-sun-principle) in 176 countries. Service Management is based on the international standard for IT service management ITIL and an innovative tool landscape based on long-term service operation experience.

## INFO BOX

### CASE STUDY: HIGH AVAILABILITY FOR ELIA

Elia is Belgium's main transmission systems operator, responsible for transferring electricity from producers and their power plants to distribution systems operators and major industrial users and also for the import and export of electricity to and from neighboring European countries. Consisting of Elia System Operator and its subsidiaries, the group operates 5,641 kilometers (3,500 miles) of overhead lines and 2,765 kilometers (1,718 miles) of underground connections, thus forming a key link between electricity markets in Northern and Southern Europe. "Powerful IT is the basis for all our company's activities in this regard," says Wim Michiels, head of Elia's IT and Datacom Exploitation Server Team. Due to the nature of its business, Elia has to have electronic information available whenever it is needed, which means a reliable and cost-effective storage solution is of paramount importance. Strategic considerations led to the decision it would be best to outsource this area of network operations in order to allow IT staff to concentrate on their core tasks. The much-coveted contract was finally won by Fujitsu's storage team because it was best able to fulfill the requirements of creating and operating a SAN storage environment in different locations as well as creating a highly efficient landscape for automated, intelligent data transfers. Along with 7x24 availability of data Fujitsu now also ensures optimization of online and backup storage services, disaster tolerance, necessary adjustments to changes in business processes and extensions, e.g. for archiving, and adequate recovery time and recovery point objectives – all at a reasonable price. With this task off his back and financial as well as personal resources freed up for strategic tasks, Wim Michiels is highly pleased to "count on support from the reliable team of Fujitsu" for data protection.



## Benefits

Managed Infrastructure may be regarded as the 'excellence layer' at the top of Fujitsu's Dynamic Infrastructures portfolio. Therefore, when considering the crucial question whether a solution is better implemented using in-house resources or external expertise, CIOs should always take Fujitsu's offer into consideration to ensure best design, quality and price in accordance with defined standards and service level agreements.

# Conclusion: Outlook and Key Differentiators

## The whole is more than the sum of its parts

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As much as IT has changed over the years, a finish line is not in sight. Rapid development in all technological and market areas tells observers that we are facing the most momentous alteration since the inception of the World Wide Web. Practically, not even the smallest companies can operate without staying “online” and “connected” – and that has changed the way we do business as well as our understanding of information technology and computer networks. Today, home users, professionals and entrepreneurs alike often tend to view IT as a commodity or utility – something as ubiquitous as electricity and running water. Such expectations still seem a little far-fetched, but they definitely point in the right direction, even though IT as a utility may not become reality within the next 20 years

The question remains: where are we going in the medium term? At Fujitsu we believe that the likeliest scenario is one that incorporates established strategies and technologies as well as disruptive ones. That means, organizations will continue working with stationary equipment wherever it seems appropriate – for instance, if pricing information or research and development data need to be protected at all times and the best way to do that is to keep them on site. Other, more generic applications and services such as email, web publishing and online shops (or less sensitive public systems like tourist information) may move to the cloud completely – provided the hosting company meets security and availability requirements. So what we will watch emerge within the next 5 years is a “hybrid model” that blends the traditional, proven approach to IT with the new on-demand culture and gives companies and end users the best of both worlds.

As a consequence, IT leaders need to evaluate various parameters when reconsidering its IT strategy:

- Regarding **technology**: What are the core competences of an infrastructure solution provider? What is the scope and focus of its portfolio? Do products, solutions and services work as an “organic whole”, i.e. are they integrated or fragmented? Does the provider offer innovative cloud-based services, or is he trying to market pre-existing, only slightly modernized concepts?
- Regarding **approach**: How does a provider work – is the company customer-/solution-oriented, or does it lean towards technology? How high is the degree of standardization, and how customizable are products, solutions and SLAs? Is the strategy long-term, or is it possible to get a quick fix for pressing problems? And finally: Do consultants attempt to “lead” their opponents to a particular point, or do they give them freedom to decide?

At Fujitsu, the near future has already begun: one aspect of Dynamic Infrastructures is that it enables us to constantly develop new services based on our latest product platforms or new products that perfectly align with existing services. This is probably best exemplified by the PRIMERGY BX900 Blade Server and the Zero Client.

The **PRIMERGY BX900** has most accurately been described as a complete, dynamic server infrastructure stored inside a single cabinet. Nicknamed Dynamic Cube, it adapts to different, changing requirements as needed. Equipped with up to 18 server blades in a 10U chassis it provides one of the highest densities for multiple applications in a compact form factor. Paired with ServerView Resource Coordinator Virtual Edition (SV RCVE), a component of the ServerView Management Suite, it turns into a consistent platform for physical and virtual servers that features a complete set of management capabilities including those needed to ensure scalability, virtualization, and high availability. Moreover, up to 6 high-end power supplies with efficiency factors over 90 percent, its patented Cool-safe™ Design, and ServerView Power Management software turn it into one of Fujitsu's most eco-friendly platforms that reduces power consumption and saves money. We even use it in our own data centers, together with a matching, reliable hard disk array – as a **cornerstone for our Server as a Service and Managed Infrastructure solutions**.

Likewise, the existing Infrastructure as a Service solutions have fueled the development of Fujitsu's **Zero Client**. As the name suggests, the Zero Client goes beyond all previous concepts for thin clients and streamlined desktops: instead of replacing rich equipment with a lean one, it simply comes **without any traditional computer components**. Zero Clients have no processor, main memory, or hard disk drive – the system's complete intelligence has been integrated into a smart display and connects to applications running on potent powerful backend servers via LAN or WAN. End users see nothing but a 22 inch, state-of-the-art monitor, a combined network/power cable, and wireless keyboard and mouse. Zero clients are directly connected to virtual infrastructures. In other words, the desktop becomes a simple, cost-effective and service-free tool for classic-task worker – the **ideal platform for Virtual Workplace solutions**.